

Fish Stocks in Rebuilding Plans: A Trend Analysis

Introduction

When a stock is determined to be overfished, the Regional Fishery Management Council must implement a plan to rebuild the stock to the level that can produce the maximum sustainable yield.

Rebuilding of a stock will generally occur if more fish survive to maturity than are lost to mortality, so it is important to set catch levels at a rate that will allow stocks to rebuild. Sometimes, factors such as habitat loss, environmental variability, and disease outbreaks hamper rebuilding efforts and stocks do not rebuild as expected. In most cases, if fishing mortality is kept within the levels outlined in the rebuilding plan, the stock should rebuild as expected.

Categories of the Trends Analysis

Using the most recent stock assessment, stocks were reviewed and grouped into four categories based on the level of fishing mortality (F) and how biomass (B) is responding:

- 1) The most recent year's estimate of F is below the overfishing level (not subject to overfishing);
- 2) The most recent year's estimate of F is above the overfishing level (subject to overfishing);
- 3) The biomass has increased since the rebuilding plan was implemented; and
- 4) The biomass has decreased or an increasing trend is insignificant (increase of 1-2%) since the rebuilding plan was implemented.

Inclusion of a stock in the "biomass has increased" category does not necessarily mean that the stock is rebuilding at the rate that is expected in the rebuilding plan.

Results

As of December 31, 2013, there were 56 stocks that are in need of rebuilding, or were rebuilt in 2013. Of these 56 stocks, 50 stocks are currently in rebuilding plans, one stock that completed rebuilding under a rebuilding plan and another stock that was rebuilt without a rebuilding plan in 2013. All of these stocks are listed in Table 2, indicating if they were included in the analysis and if not, an explanation of why they were not included. A total of 33 stocks were included in the analysis and are grouped into one of the four categories described above, and listed by region in Table 1.

The percentage of stocks in each category is as follows:

- 1) Not Subject to Overfishing/ Biomass Increasing – 58%
- 2) Not Subject to Overfishing/ Biomass Not Increasing – 12%
- 3) Subject to Overfishing/ Biomass Increasing – 9%
- 4) Subject to Overfishing/ Biomass Not Increasing – 21%

Table 1. Regional and Total Categories

Northeast Region				
Stock	Not Subject to Overfishing/ Biomass Increasing	Not Subject to Overfishing/ Biomass Not Increasing	Subject to Overfishing / Biomass Increasing	Subject to Overfishing/ Biomass Not Increasing
American plaice - Gulf of Maine / Georges Bank	√			
Atlantic cod - Georges Bank				√
Atlantic cod - Gulf of Maine				√
Atlantic halibut – Northwestern Atlantic Coast		√		
Barndoor skate - Georges Bank / Southern New England	√			
Ocean pout - Northwestern Atlantic Coast		√		
Smooth skate – Gulf of Maine	√			
Thorny skate - Gulf of Maine				√
Tilefish - Mid-Atlantic Coast	√			
White hake - Gulf of Maine / Georges Bank	√			
Winter flounder – Georges Bank	√			
Winter flounder - Southern New England / Mid-Atlantic	√			
Yellowtail flounder - Cape Cod / Gulf of Maine			√	
Yellowtail flounder - Georges Bank				√
Percentage of Stocks in Category	50%	14%	7%	29%
Southeast Region				
Black sea bass – Southern Atlantic Coast	√			
Gray triggerfish – Gulf of Mexico			√	
Greater amberjack – Gulf of Mexico				√
Red porgy - Southern Atlantic Coast	√			
Red snapper – Gulf of Mexico	√			
Percentage of Stocks in Category	60%	-	20%	20%

Northwest Region				
Stock	Not Subject to Overfishing/ Biomass Increasing	Not Subject to Overfishing/ Biomass Not Increasing	Subject to Overfishing / Biomass Increasing	Subject to Overfishing/ Biomass Not Increasing
Bocaccio - Southern Pacific Coast	√			
Canary rockfish - Pacific Coast	√			
Cowcod - Southern California	√			
Darkblotched rockfish - Pacific Coast	√			
Pacific ocean perch - Pacific Coast	√			
Petrale sole – Pacific Coast	√			
Yelloweye rockfish - Pacific Coast	√			
Percentage of Stocks in Category	100%	-	-	-
Alaska Region				
Blue king crab – Pribilof Islands	√			
Percentage of Stocks in Category	100%	-	-	-
Highly Migratory Species Division				
Albacore - North Atlantic	√			
Bigeye tuna - Atlantic		√		
Blue Marlin – Atlantic				√
Bluefin Tuna – Western Atlantic			√	
Dusky Shark - Atlantic				√
Sandbar Shark - Atlantic		√		
Percentage of Stocks in Category	17%	33%	17%	33%
National Totals				
Percentage of Stocks in Category	58%	12%	9%	21%

Table 2. Stocks that have been declared overfished and their status of inclusion or rationale for exclusion in the analysis. Some stocks may be in rebuilding plans but not included in the analysis for the following reasons:

- 1) A formal rebuilding program was not submitted under the Magnuson-Stevens Act¹.
- 2) In a rebuilding plan, but the plan has only recently been adopted and the most recent stock assessment does not yet include a full year under the plan.
- 3) In a rebuilding plan, but the stock does not have reliable time series estimates of biomass and/or fishing mortality.
- 4) The stock has been recently declared overfished, so a rebuilding plan has not yet been implemented.
- 5) In a rebuilding plan, but stock has not been assessed recently to determine effectiveness of measures (stock assessment is not recent).
- 6) Salmon rebuilding targets levels (based on escapement) are not comparable to marine stocks that rebuild to a target biomass.
- 7) Stock does not require a domestic rebuilding plan under section 304(i) of the Magnuson-Stevens Act because status is due to excessive international fishing pressure; NMFS is working internationally to rebuild this stock.

Stock	Jurisdiction	Current Rebuilding Program Progress	Status in Analysis
NORTHEAST REGION			
American plaice - Gulf of Maine / Georges Bank	NEFMC	10/10-year plan	Included
Atlantic cod - Georges Bank	NEFMC	10/23-year plan	Included
Atlantic cod - Gulf of Maine	NEFMC	10/10-year plan	Included
Atlantic halibut - Northwestern Atlantic Coast	NEFMC	10/52-year plan	Included
Atlantic salmon - Gulf of Maine	NEFMC	Not included	Excluded – 1
Atlantic wolffish - Gulf of Maine / Georges Bank	NEFMC	Not included	Excluded – 2
Barndoor skate - Georges Bank / Southern New England	NEFMC	Year 11 of plan	Included
Butterfish (Atlantic)	MAFMC	Not included	Excluded – 3
Ocean pout - Northwestern Atlantic Coast	NEFMC	10/10-year plan	Included
Smooth skate - Gulf of Maine	NEFMC	4/10-year plan	Included
Thorny skate - Gulf of Maine	NEFMC	11 of 25-year plan	Included
Tilefish - Mid-Atlantic Coast	MAFMC	13/10-year plan	Included
White hake - Gulf of Maine / Georges Bank	NEFMC	10/10-year plan	Included
Windowpane - Gulf of Maine / Georges Bank	NEFMC	Not included	Excluded – 2
Winter flounder - Georges Bank	NEFMC	4/7-year plan	Included
Winter flounder - Southern New England / Mid-Atlantic	NEFMC	1/10-year plan ²	Included
Witch flounder - Northwestern Atlantic Coast	NEFMC	Not included	Excluded – 2
Yellowtail flounder - Cape Cod / Gulf of Maine	NEFMC	10/19-year plan	Included
Yellowtail flounder - Georges Bank	NEFMC	8/26-year plan	Included

¹ Applicable to Atlantic salmon only - a Final Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon has been developed under the Endangered Species Act.

² This is the second rebuilding plan for this stock. The first plan was implemented in 2004, but did not make adequate progress, so a new plan was implemented in 2013.

Stock	Jurisdiction	Current Rebuilding Program Progress	Status in Analysis
SOUTHEAST REGION			
Caribbean Grouper Unit 1	CFMC	Not included	Excluded – 3
Black sea bass - Southern Atlantic Coast	SAFMC	Rebuilt	Included
Blueline tilefish - Southern Atlantic Coast	SAFMC	Not included	Excluded - 4
Caribbean Grouper Unit 2	CFMC	Not included	Excluded – 3
Caribbean Grouper Unit 4	CFMC	Not included	Excluded – 3
Gag - Gulf of Mexico	GMFMC	Not included	Excluded – 2
Gray triggerfish – Gulf of Mexico	GMFMC	6/10-year plan	Included
Greater amberjack – Gulf of Mexico	GMFMC	11/10-year plan	Included
Queen conch – Caribbean	CFMC	Not included	Excluded – 3
Red grouper - Southern Atlantic Coast	SAFMC	Not included	Excluded – 2
Red porgy - Southern Atlantic Coast	SAFMC	14/18-year plan	Included
Red snapper – South Atlantic	SAFMC	Not included	Excluded – 2
Red snapper - Gulf of Mexico	GMFMC	13/27-year plan	Included
Snowy grouper - Southern Atlantic Coast	SAFMC	Not included	Excluded – 5
NORTHWEST REGION			
Bocaccio - Southern Pacific Coast	PFMC	14/22-year plan	Included
Canary rockfish - Pacific Coast	PFMC	13/28-year plan	Included
Chinook salmon - California Central Valley: Sacramento (fall)	PFMC	Rebuilt	Excluded – 6
Cowcod - Southern California	PFMC	13/71-year plan	Included
Darkblotched rockfish - Pacific Coast	PFMC	12/23-year plan	Included
Pacific ocean perch - Pacific Coast	PFMC	14/20-year plan	Included
Petrale sole - Pacific Coast	PFMC	2/4-year plan	Included
Yelloweye rockfish - Pacific Coast	PFMC	11/71-year plan	Included
Pacific bluefin tuna - Pacific	PFMC / WPFMC	Not included	Excluded - 7
PACIFIC ISLANDS REGION			
Seamount Groundfish Complex - Hancock Seamount	WPFMC	Not included	Excluded – 3
Striped marlin - Central Western - Pacific	PFMC / WPFMC	Not included	Excluded - 7
ALASKA REGION			
Blue King Crab - Pribilof Islands	NPFMC	9/10-year plan	Included
HIGHLY MIGRATORY SPECIES			
Blue marlin – North Atlantic	HMS	Year 13 of plan	Included
Albacore - North Atlantic	HMS	Year 8 of Plan	Included
Bigeye tuna – Atlantic	HMS	Year 15 of Plan	Included
Blacknose shark – Atlantic	HMS	Not included	Excluded – 2
Bluefin tuna – Western Atlantic	HMS	15/20-year plan	Included
Dusky shark – Atlantic	HMS	6/100-year plan	Included
Porbeagle shark – Atlantic	HMS	Not included	Excluded – 2
Sailfish – Western Atlantic	HMS	Not included	Excluded – 3
Sandbar shark – Atlantic	HMS	6/66-year plan	Included
Scalloped hammerhead – Atlantic	HMS	Not included	Excluded – 4
White marlin – North Atlantic	HMS	Not included	Excluded – 3

Table 3. Rebuilding stocks quadrant

The green and red colors highlight stock that have biomass (B) responding as expected to fishing mortality (F). The orange color indicates the stocks are not responding to F status as expected.

	Not Subject to Overfishing	Subject to Overfishing
Biomass Increasing	<ul style="list-style-type: none"> American plaice - Gulf of Maine / Georges Bank Barndoor skate - Georges Bank/Southern New England Smooth skate – Gulf of Maine Tilefish - Mid-Atlantic Coast Winter flounder - Georges Bank Winter flounder - Southern New England / Mid-Atlantic White hake - Gulf of Maine / Georges Bank Black sea bass - Southern Atlantic Coast Red porgy - Southern Atlantic Coast Red snapper – Gulf of Mexico Red snapper – Gulf of Mexico Bocaccio - Southern Pacific Coast Canary rockfish - Pacific Coast Cowcod - Southern California Darkblotched rockfish - Pacific Coast Petrale sole – Pacific Coast Pacific ocean perch - Pacific Coast Yelloweye rockfish - Pacific Coast Blue king crab – Pribilof Islands Albacore - North Atlantic 	<ul style="list-style-type: none"> Yellowtail flounder - Cape Cod/Gulf of Maine Gray Triggerfish – Gulf of Mexico Bluefin tuna – Western Atlantic
Biomass Not increasing	<ul style="list-style-type: none"> Atlantic halibut - Northwestern Atlantic Coast Ocean pout - Northwestern Atlantic Coast Bigeye tuna - Atlantic Sandbar Shark - Atlantic 	<ul style="list-style-type: none"> Atlantic cod – Georges Bank Atlantic cod - Gulf of Maine Thorny skate - Gulf of Maine Greater amberjack – Gulf of Mexico Blue marlin – Atlantic Dusky Shark – Atlantic Yellowtail Flounder - Georges Bank